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10/695,682	10/29/2003	Toan Nguyen	CIS03-46(7414)	5032

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EXAMINER	
CHANDRAN, BIJU INDIRA	

ART UNIT	PAPER NUMBER
2835	

DATE MAILED: 10/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/695,682	NGUYEN ET AL.	
	Examiner	Art Unit	
	Biju Chandran	2835	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 October 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *6/20/2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 1-13 and 15-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chandran et al. (PGPub US 2003/0063440 A1) in view of Hellbruck et al. (PGPub US 2001/0030037 A1).

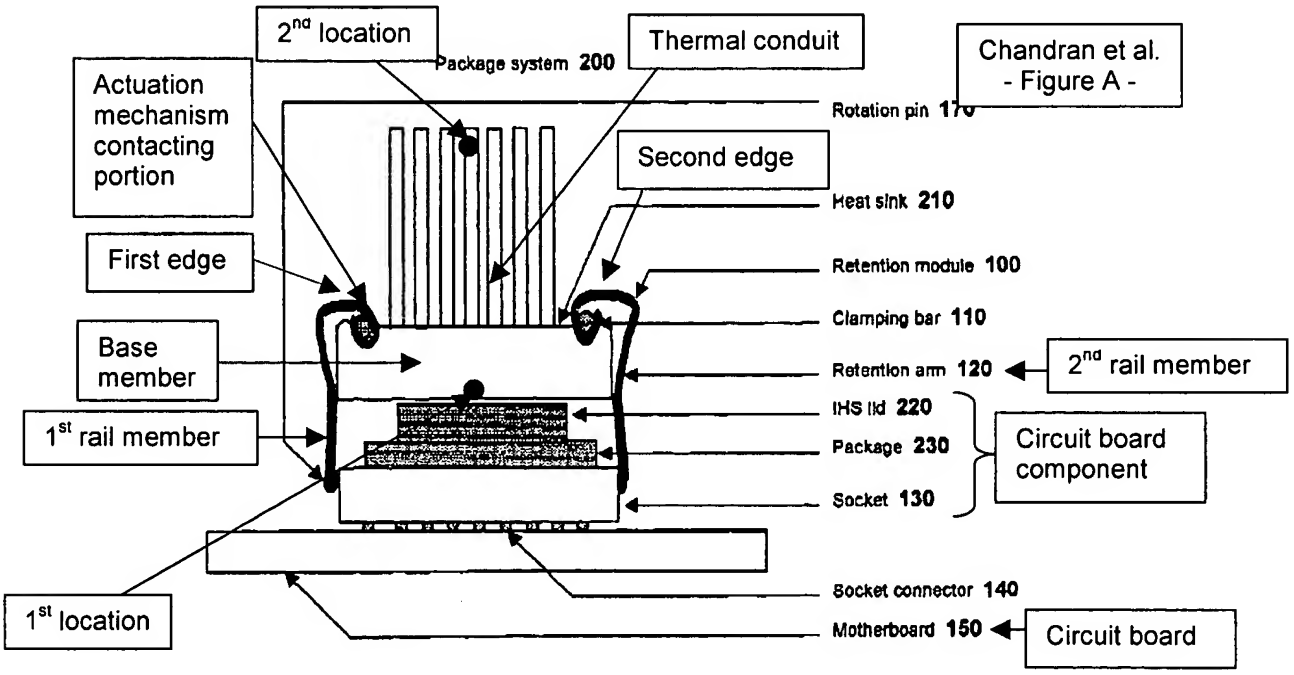
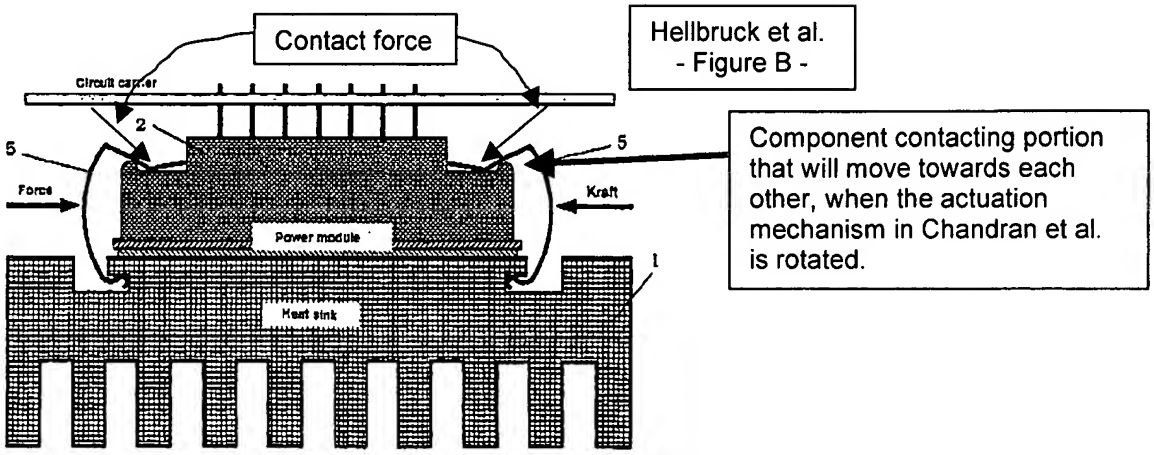


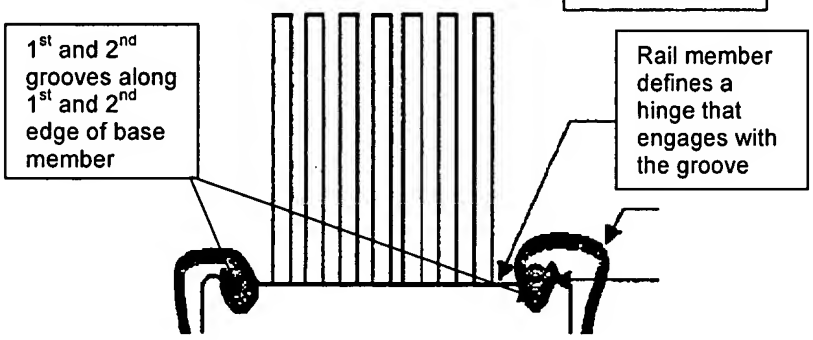
FIG. 2



- Regarding claim 1, Chandran et al. disclose a circuit board module (200), comprising: a circuit board (150); a circuit board component (220+230+130) mounted to the circuit board; and a heat sink assembly (210) including: a base member which has a first edge and a second edge (marked in figure), the base member being configured to operate as a thermal conduit between a first location proximate to the circuit board component and a second location distal to the circuit board component; a first rail member (marked) coupled to the base member along the first edge of the base member and a second rail member (120) coupled to the base member along the second edge of the base member; and an actuation mechanism (110) coupled to the base member configured to move the first and second rail members. While not clearly stated, the spring biased force (last 3 lines, paragraph 0020) of rail members 120 would appear to require the members to move towards each other in order to securely retain the base to the circuit

component. Hellbruck et al. is relied upon to show a clear teaching of an assembly where the first and second rail members (5) move towards each other when the base member resides at the first location to fasten the base member to the circuit board component. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to incorporate the rail members that move towards each other as taught by Hellbruck et al. in the heat sink assembly as disclosed by Chandran et al. if in fact the rails of Chandran et al. do not already move in this manner. The motivation to do so would be to make the heat sink assembly adapt to a range of sizes of components to be mounted therein.

- Figure C -



- With respect to claim 2, Chandran et al. further discloses that the base member defines a first groove along the first edge and a second groove along the second edge, wherein the first rail member defines a first hinge which engages with first groove defined by the base member along the first edge, and wherein the

second rail member defines a second hinge which engages with the second groove defined by the base member along the second edge.

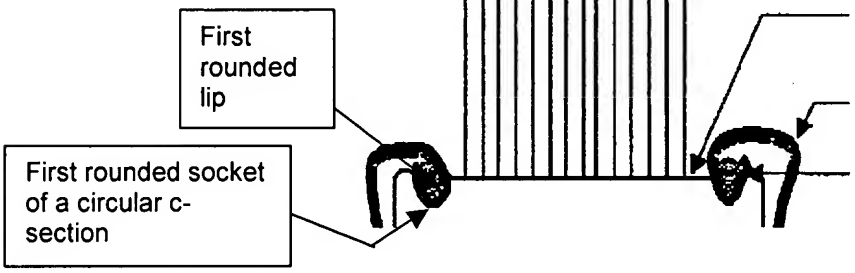
- With respect to claim 3, Chandran et al. as modified by Hellbruck et al. satisfy all the limitations of claim 1, and further disclose that the first rail member defines a first substantially elongated surface which is configured to assert a first distributed contact force onto the circuit board component in response to movement of the actuation mechanism; and wherein the second rail member defines a second substantially elongated surface which is configured to assert a second distributed contact force (marked in attached Figure B) onto the circuit board component in response to movement of the actuation mechanism (see figures 6a, 6b and 7a in Hellbruck et al., and figure 1, Chandran et al.).
- With respect to claim 4, Chandran et al. as modified by Hellbruck et al. further discloses that the first and the second rail members includes an actuation mechanism contacting portion and a component contacting portion (marked in attached Figures A and B) which are integrally joined together to provide that rail member with an L-shaped cross-section.
- With respect to claim 5, Chandran et al. disclose a heat sink assembly (200), comprising: a base member which has a first edge

and a second edge (marked in attached Figure A), the base member being configured to operate as a thermal conduit between a first location proximate to a circuit board component and a second location distal to the circuit board component; a first rail member coupled to the base member along the first edge of the base member and a second rail member coupled to the base member along the second edge of the base member (marked in attached Figure A); and an actuation mechanism (110) coupled to the base member. Chandran et al. do not clearly state that the first and second rail members towards each other. However, the spring biased force (last 3 lines, paragraph 0020) of rail members 120 would appear to require the members to move towards each other in order to securely retain the base to the circuit component. Hellbruck et al. is relied upon to show a clear teaching of an assembly where the first and second rail members (5) move towards each other when the base member resides at the first location to fasten the base member to the circuit board component. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to incorporate the rail members that move towards each other as taught by Hellbruck et al. in the heat sink assembly as disclosed by Chandran et al. if in fact the rails of Chandran et al. do not already move in this manner. The

motivation to do so would be to make the heat sink assembly adapt to a range of sizes of components to be mounted therein.

- With respect to claim 6, Chandran et al. further disclose that the base member defines a first groove along the first edge and a second groove along the second edge (attached Figure A), wherein the first rail member defines a first hinge which engages with first groove defined by the base member along the first edge, and wherein the second rail member defines a second hinge which engages with the second groove defined by the base member along the second edge (attached Figure C).

- Figure D -



- With respect to claim 7, Chandran et al. further disclose that the base member defines, as the first groove, a first rounded socket along the first edge; wherein the base member defines, as the second groove, a second rounded socket along the second edge; wherein the first rail member defines, as the first hinge, a first

rounded lip; and wherein the second rail member defines, as the second hinge, a second rounded lip (attached Figure D).

- With respect to claim 8, Chandran et al. further disclose that each of the first and second rounded sockets defined by the base member has a circular cross-section, and wherein each of the first and second rounded lips respectively designed by the first and second rail members has a circular cross-section that substantially minors that of the first and second rounded sockets defined by the base member (see attached Figure D) to enable each of the first and second rail members to smoothly pivot relative to the base member in a hinge-like manner in response to movement by the actuation mechanism.
- With respect to claim 9, Chandran et al. as modified by Hellbruck et al. satisfy all the limitations of claim 5, and further disclose that the first rail member defines a first substantially elongated surface which is configured to assert a first distributed contact force (marked in attached Figure B) onto the circuit board component in response to movement of the actuation mechanism; and wherein the second rail member defines a second substantially elongated surface which is configured to assert a second distributed contact force onto the circuit board component in response to movement of

the actuation mechanism (see figures 6a, 6b and 7a in Hellbruck et al., and figure 1, Chandran et al.).

- With respect to claim 10, Chandran et al. modified by Hellbruck et al. as applied above further disclose that the circuit board component extends along an X-Y plane when residing at the first location (figure 2, Chandran et al.), and wherein the first and second rail members are configured to simultaneously assert the first and second distributed contact forces substantially toward each other within the X-Y plane in response to movement of the actuation mechanism (marked in attached Figure B).
- With respect to claim 11, Hellbruck et al. further discloses that the first and second rail members are configured to assert the first and second distributed contact forces onto a common side of the circuit board component and at least partially toward the base member in response to movement of the actuation mechanism (marked in attached Figure B).
- With respect to claim 12, Chandran et al. further discloses that each of the first and second rail members includes an actuation mechanism contacting portion (attached Figure A) and a component contacting portion (attached Figure B) which are integrally joined together to provide that rail member with an L-shaped cross-section.

- With respect to claim 13, Chandran et al. as modified by Hellbruck et al. satisfies all the limitations of claim 12, and further disclose that the actuation mechanism includes displacement members (110) which, when coupled to the base member, are configured to pivotally displace the actuation mechanism contacting portions of the first and second rail members to pivot the contacting portions of the first and second rail members toward each other (Figure B).
- With respect to claim 15, Chandran et al. discloses a heat sink assembly, comprising: a base member which has a first edge and a second edge, the base member being configured to operate as a thermal conduit between a first location proximate to a circuit board component and a second location distal to the circuit board component; a first rail member coupled to the base member along the first edge of the base member and a second rail member coupled to the base member along the second edge of the base member; and means for moving portions of the first and second rail members when the base member resides at the first location to fasten the base member to the circuit board component. Chandran et al. do not disclose that the end of the first and second rail members towards each other. Hellbruck et al. disclose an assembly where the end of the first and second rail members moves towards each other when the base member resides at the

first location to fasten the base member to the circuit board component. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to incorporate the portion of the rail members that move towards each other as taught by Hellbruck et al. in the heat sink assembly as disclosed by Chandran et al., to make the heat sink assembly adapt to different kinds of circuit board components.

- With respect to claim 16, Chandran et al. further discloses that the base member defines a first groove along the first edge and a second groove along the second edge, wherein the first rail member defines a first hinge which engages with first groove defined by the base member along the first edge, and wherein the second rail member defines a second hinge which engages with the second groove defined by the base member along the second edge (see attached Figure C).
- With respect to claim 17, Chandran et al. as modified by Hellbruck et al. further discloses that the first rail member defines a first substantially elongated surface which is configured to assert a first distributed contact force onto the circuit board component in response to actuation of the means for moving; and wherein the second rail member defines a second substantially elongated surface which is configured to assert a second distributed contact

force (marked in attached Figure B) onto the circuit board component in response to actuation of the means for moving (see figures 6a, 6b and 7a in Hellbruck et al., and figure 1, Chandran et al.).

- With respect to claim 18, Chandran et al. further discloses that each of the first and second rail members includes an actuation mechanism contacting portion (attached Figure A) and a component contacting portion (attached Figure B) which are integrally joined together to provide that rail member with an L-shaped cross-section.
- With respect to claim 19 the method of attaching the heat sink to the component is inherent in the structure of the device. Specifically, Chandran et al. modified by Hellbruck et al. as applied above discloses a method of attaching a heat sink assembly to a circuit board component. Spreading ends of the first and second rail members must be performed in order for the heat sink assembly to be mounted on the circuit board component: Additionally, the base member of the heat sink assembly is positioned proximate to the circuit board component; and the ends of the first and second rail members of the heat sink assembly are then moved towards each other to fasten the base member to the

circuit board component (Hellsbruck et al., figures 1,1a-1c, paragraphs 0033, 0034).

2. Claims 14 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chandran et al. in view of Hellbruck et al. as applied to claims 13 and 19 above, and further in view of Herring et al (PGPub US 2003/0048610 A1).

   - With respect to claim 14, Chandran et al. as modified by Hellbruck et al. satisfies all the limitations of claim 13. Chandran et al. does not disclose that the displacement members include a threaded portion which threads into a respective threaded aperture defined by the base member. Herring et al. disclose a heat sink assembly where the displacement members includes (i) a threaded portion which threads into a respective threaded aperture defined by the base member and (ii) a head portion, coupled to the threaded portion, which is configured to engage an end of a torque wrench to provide that displacement member with rotational movement and linear displacement in response to rotation of the torque wrench (Herring et al., Figure 2). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to incorporate the above mentioned teaching of Herring et al., on the displacement members of the heat sink assembly as disclosed by Chandran et al. to ensure that the rail members do not

snap off of the circuit board component during vibratory loads that are seen during use.

- With respect to claim 20, the method of assembly including rotating threaded displacement members is inherent in the apparatus as described above in the rejection to claim 14.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Biju Chandran whose telephone number is (571) 272-5953. The examiner can normally be reached on 8AM - 5PM. Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynn Feild can be reached on (571) 272-2092. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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